Software Defined Networking – Internet of Medical Things Laboratory

The Software defined Networking - Internet of Medical Things Lab, CSE department, Tezpur University funded by Ministry of Electronics and Information Technology (MeitY), Govt. of India in the year 2020. The lab runs under the supervision of Dr. Nabajyoti Medhi. The objective of the research team of the SDN-IoMT lab is to study and create a SDN architecture ensuring Quality of services in the Cloud based environment for Healthcare Industry. The research team also works in the development of IoMT hardware kit as well as in data collection of various vitals of patients and indulges in prediction of various diseases using machine learning techniques.

Research has so far been supported/funded by "Ministry of Electronics and Information Technology (MeitY), Govt of India".

(a) Equipment(s)

Sl. No.	Equipment (with specification) and Year of Purchase	Quantity
1	Switch - Allied Telesis x230-18GP switch	5
2	Switch - Dell s4148f-ON switch	1
3	Workstations : Dell	1
4	Server: DELL EMC 1 X DDR4 SDRAM with ECC 128 GB	1
5	Printer: Brother HL-2360D	1
6	WiFi Access Point: NETGEAR Controller based Indoor Access Point	10
7	Raspberry Pi 3B+	20
8	Arduino Board	20
9	Gas Sensor	20
10	ESP32 Development Board	20
11	Sensor Probe For Pulse Oximetry	20
12	Accelerometer And Gyroscope	20
13	Heart Rate Monitor	20
14	Muscle Sensor	20
15	24-U Server Rack (Valrack)	1

(b) Types of Practical(s) Conducted

Sl. No.	Experiments Conducted/Performed
1	OpenFlow based QoS management of Healthcare Data in a Software-Defined Fog Environment.
2	Context-Aware Multi-User Cloud-Fog Offloading in IoMT
3	Flow-table verification using Blockchain for SDN Security
4	Health Condition Prediction and Covid Risk Detection Using Healthcare 4.0 Techniques

(c) Open-source tools/software used

Name of tool/software	Utility
Mininet	For Network Topology related testing
Wireshark	For Network Traffic Analysis
Ryu (With OpenFlow)	SDN controller
Apache Cassandra	For Distributed System based data storage and analysis
Node-Red	For IoT System Simulation
Raspbian	Used in Raspberry Pi to install OpenVSwitch
P4 (Programming Protocol - independent Packet Processors)	Domain-specific programming language for network device packet processing
Arduino IDE	For prototyping and developing code for microcontrollers.

(d) Licensed tools/software used:

Name of tool/software	Utility	License validity
AlliedWare Plus	For Allied Telesis Hardware switches	5 years

(e) People working in the Laboratory:

Research scholars and project students are working in the lab.